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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/665,818      09/20/00      HUANG

C      45688-00006

EXAMINER

MMC2/1010

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ART UNIT

PAPER NUMBER

2814

DATE MAILED:

10/10/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

**Office Action Summary**

Application No.

09/665,818

Applicant(s)

HUANG, CHIEN-PING

Examiner

THANH V TRAN

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 ~~is~~/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 ~~is~~/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-3,9-10 and 16-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Markush groupings in Claim 2 ( line 16), Claim 9 ( line 1), Claim 16 ( line 8) "...made of copper, copper alloy, aluminum or aluminum alloy...". and in Claim 3 ( line 18) , Claim 10 ( line 3), Claim 17 ( line 10) "...made of epoxy, B-stage epoxy or silicone..." should be put in the proper phrasing: "...selected from the group consisting of..." See MPEP §2173.05(h).

### ***Claim Rejections - 35 USC § 102/103***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Initially, and with respect to Claims 6 and 20, note that a "product by process" claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and the related case law cited therein which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. As stated in *Thorpe*, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. In *re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); In *re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935).

~~Note that Applicant has burden of proof in such cases as the above case law~~  
makes clear.

3. Claims 1-4, 6-11, 13-18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipate by, or in the alternative, under 35 U.S.C § 103 as obvious over *Norio et al.* ( JP 09-172126).

Referring to figure 8, *Norio et al.* disclose a semiconductor package for enhancing heat dissipation, comprising: A die 2 (chip) including an active surface;

A leadframe including;

A die pad 1 having a first and a second surface, the die being mounted on the first surface; and

A plurality of leads 6 electrically connected to the active surface of the die through a plurality of bonding wires 7;

An encapsulant 8 for sealing an upper mold containing the die and leadframe;

A heat sink 4 mounted to the second surface of the die pad and the plurality of leads with a thermally conductive and electrically insulating adhesive glue 5;

With respect to claim 2,9 and 16 Norio et al. also disclose the heat sink being made of copper alloy ( paragraph 0017, line 1);

With respect to claims 3,10 and 17 Norio et al. disclose the adhesive glue being made of epoxy ( paragraph 0005, line 2);

With respect to claims 4, 7, 11 and 18, Norio et al. disclose the leadframe being of a cavity –up type ( see figure 8).

With respect to claims 6 and 20, the die 2 mounting to the first surface of the die pad 1, and using the plurality of bonding wires 7 to electrically connect the active surface of the die plurality of lead 6 ( see figure 8), encapsulating an upper mold for sealing the die ( paragraph 0006, line 2) and the leadframe formed by the die and the plurality of leads, mounting the heat sink 4 to the surface of the die pad 1 and part of the plurality of leads with thermally conductive and electrically insulating adhesive glue 5, and forming and singulating the leadframe.

With respect to claim 8; Norio et al. disclose a central-hole die pad having a first surface and second surface, the first surface being mounted to the die , a heat sink of T-type structure ( see figure 8).

As to the grounds of rejection under section 103, see MPEP § 2113 which discusses the handling of "product by process" claims and recommends the alternative (§ 102 / § 103) grounds of rejection. How the body region of a second conductivity type is formed, either by diffusion or by ion injection affect the final device structure.

4. Claims 5, 12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norio et al. in view of Yamashita ( U.S patent # 5,789,820).

Norio et al. disclose most aspects of the invention ( paragraph 3 ) except for the heat sink further comprising a heat radiator on its top if the leadframe is of a cavity – down type. In figure 6, Yamashita discloses a leadframe being of a cavity-down type with a heat radiator 17 being adhered by an adhesive layer 18 to the heat sink 12 to enhance the heat dissipation ( column 5, line 35). It would have been obvious to one having ordinary skill in the art of the time the invention was made to form a heat radiator on the top of heat sink if the leadframe is of cavity -down type as taught by Yamashita in the device of Norio to enhance the heat dissipation.

### **Conclusion**

5. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. Papers should be fax to Art Unit 2814 via the Art Unit 2814 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform with the notice published in the official Gazette, 1096 OG 30( 15 November 1989). The Art Unit 2814 Fax Center number is (703)308-7722 or –7724. The Art Unit 2824 Fax Center is to be used only for papers related to Art Unit 2814 applications.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to THANH V TRAN whose telephone number is 703-306-0208. The examiner can normally be reached on 8:00AM-5:30PM Monday through Friday or by e-mail via Thanh.Tran1@uspto.gov.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306 2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703 -308-7722 for regular communications and 703 -305-3431 for After Final communications.

8. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

9. The following list is the Examiner's field of search for the present Office

Action:

Field of Search	Date
<b>U.S Class/Subclass(es):</b> 257/ 704-707,710,778-780	09/28/01
<b>Other Documentation:</b>	
<b>Electronic Database(s):</b> East ( USPAT)	09/28/01

Thanh Tran

October 1,2001

*Thanh Tran*  
Patent Exam  
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